

PATENT APPLICATION**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re application of

Docket No: Q60803

Dominique Helena Lucia CHANTRAIN, et al.

Appln. No.: 09/666,388

Group Art Unit: 2131

Confirmation No.: 7111

Examiner: Christian A. LAFORGIA

Filed: September 20, 2000

For: METHOD FOR CONNECTING A FIRST USER-TERMINAL TO A SECOND USER-
TERMINAL, RELATED DEVICES AND RELATED SOFTWARE MODULES

APPELLANTS' BRIEF ON APPEAL UNDER 37 C.F.R. § 1.192**MAIL STOP APPEAL BRIEF - PATENTS**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

FILED

JUN - 7 2004

Sir:

In accordance with the provisions of 37 C.F.R. § 1.192, Appellant submits the following:

I. REAL PARTY IN INTEREST

The real party in interest is ALCATEL, by virtue of an assignment executed by Dominique Helena Lucia Chantrain, Stephane Focant and Nick Marly (Appellant, hereafter), on September 8, 2000, and recorded by the Assignment Branch of the U.S. Patent and Trademark Office on December 28, 2000 (at Reel 011393, Frame 0759).

II. RELATED APPEALS AND INTERFERENCES

To the knowledge and belief of Appellant, the Assignee, and the undersigned, there are no other appeals or interferences before the Board of Appeals and Interferences that will directly affect or be affected by the Board's decision in the instant Appeal.

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
U.S. Appln. No.: 09/666,388

Attorney Docket No.: Q60803

III. STATUS OF CLAIMS

Claims 1-14 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,449,272 to Chuah et al. (hereinafter "Chuah"). No other grounds of rejection or objection currently are pending. This appeal is directed to the rejected claims 1-14.

IV. STATUS OF AMENDMENTS

With the filing of this Brief, all Amendments have been entered and considered by the Examiner.

The application was originally filed with claims 1-13.

In response to the non-final Office Action, Appellant filed an Amendment under 37 C.F.R. § 1.111 on July 30, 2003. In this Amendment, claims 1-13 were amended so as to remove unnecessary reference labels and so as to conform more closely to a form common in US practice. Accordingly, claims 6, 8 and 10-13 have been rewritten in independent form. In addition, new claim 14 was added.

In response to the final Office Action, Appellant filed a Response under 37 C.F.R. § 1.116 on February 27, 2004, making minor amends to claims 1 and 8. In particular, the phrase "such as the internet" was deleted from the preamble of the claims 1 and 8. In the Advisory Action, the Examiner indicated that these minor amendments will be entered for the purpose of an Appeal, and this Appeal was undertaken.

The Appendix included with this Brief, setting forth the claims involved in the appeal, reflects the claim changes made in the above-identified Amendments.

V. SUMMARY OF THE INVENTION

Appellant's invention is a method, a network access server, a subscriber data server and a software module for use in a network having user terminals communicating with respective network access servers. Specifically, a network has a number of user terminals (e.g., UT1 and UT2) and a number of access nodes (e.g., NAS1...NAS3, network access servers) connecting each of the user terminals to the network and taking care of a subscription information of the connected user-terminals to a virtual private network (see Fig. 1; specification, page 4, lines 3 to

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
U.S. Appln. No.: 09/666,388

Attorney Docket No.: Q60803

13). Each network access node constitute an edge of the network and is interconnected with other network access nodes via subscriber data server (SDS) (Fig. 1; specification, page 4, lines 14 to 20).

The network access node is build up of a switch notification reception means (SNRM) for receiving a request from its corresponding user terminal to initiate a switch-over of the connection of this user-terminal to another private network. The SNRM is coupled to the switching means (SM) that is adapted to perform the actual switch of the requesting user terminal. The SM is coupled to a user terminal connect notification sending means (HCNSM) adapted to send registration information to the subscriber data server at connection (Fig. 2; specification, page 4, lines 21 to 31).

Optionally, the network access node may have one or more connection establishment request reception means and connection establishment request sending means. For example, the network access node may have a connection establishment request reception means (CERRM1) adopted to receive a request for connection from the subscriber data server to establish a connection between two user terminals of different virtual private networks. This CERRM1 is coupled to connection establishment request sending means (CERSM2) adopted to notify the corresponding user terminal of an incoming call (Fig. 2; specification, page 5, lines 7 to 15). The network access node may also or in alternative, have connection establishment request reception means (CERRM4) adapted to receive a connection request from its corresponding user terminal and a connection establishment request sending means (CERSM4), which is coupled to CERRM4, and is adapted to notify the subscriber data server about an incoming call request from its corresponding user terminal (Fig. 5; specification, page 5, lines 22 to 29; page 7, line 26 to page 8, line 4).

The subscriber data server has a user-terminal connect notification reception means (UTCNRM) that receives the connection information sent at connection of the user terminal to a corresponding network access provider or sent at switch of a virtual private network by a user terminal. The UTCNRM is coupled to the user-terminal connect notification updating means (UTCNUM) that is adapted to update the database (DB) of the subscriber data server with

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
U.S. Appl. No.: 09/666,388

Attorney Docket No.: Q60803

connection information. The subscriber data server also has a connection establishment request reception means (CERRM) that receives connection request from a user terminal to establish connection between user terminals connected to different virtual private networks (VPNs). The CERRM is couple to a registration information searching means (RISM) that searches in the database for the recent registration information of the non-requesting user terminal. The RISM is coupled to connection establishment request sending means (CERSM1) that notifies the non-requesting user terminal about an incoming call from the requesting user terminal (Fig. 3, specification, page 6, lines 10 to 25).

The user terminal has a connection establishment request reception means (CERRM3), which receives a connection request from the subscriber data server. The CERRM3 is coupled to an incoming call handling means (ICHM) that is adapted to handle the connection request from the another user terminal. The ICHM is coupled to switch requesting means (SRM) that request the corresponding network access server to switch its connection to the virtual private network of another user terminal (Fig. 4; specification, page 7, lines 10 to 18).

The user terminals of different virtual private networks are connected in accordance with the following procedure. An originating user terminal tries to obtain the network address (e.g. IP address) of the user terminal to be contacted. When, these user terminals are not in the same virtual private network, however, the originating user terminal will not be able to obtain the network address the terminal to be contacted. Thus, the originating user terminal will request the subscriber data server for a connection to this terminal to be contacted by sending a connection request via corresponding network access server (specification, page 8, lines 16 to 25).

The subscriber data server receives a connection request from the originating user terminal and searches in the database for the recent registration information of the user terminal to be contacted. Upon locating the most recent registration information of the user terminal to be contacted, the subscriber data server, using the located information, sends an incoming call notification to the terminal to be contacted via its corresponding network access node. The user terminal to be contacted decides whether to accept the call or not. When the user terminal to be contacted accepts the call, it requests the corresponding network access server to be switched to

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
U.S. Appln. No.: 09/666,388

Attorney Docket No.: Q60803

the virtual private network of the originating user terminal. Upon receipt of the request, the switching means of the network access server performs the switch and notifies the subscriber data server of the new registration information. Finally, the subscriber data server updates the registration information of the contacted user terminal (specification, page 9, line 10 to page 11, line 9).

VI. ISSUES

One issue is on appeal.

The issue is whether claims 1-14 are improperly finally rejected under 35 U.S.C. § 103 as being unpatentable over Chuah.

VII. GROUPING OF CLAIMS

The claims of the present application may properly be considered in three groups that are separately patentable and therefore do not stand or fall together.

The proper grouping of the claims is as follows:

- Group 1:** Independent claims 1, and dependent claims 2-5, 14 stand or fall together.
- Group 2:** Independent claims 6, 8 and dependent claims 7, 9 stand or fall together.
- Group 3:** Independent claims 10-13 stand or fall together.

VIII. ARGUMENTS

The Examiner rejects claims 1-14 under 35 U.S.C. § 103 as being unpatentable over Chuah. Appellant respectfully submits that Chuah fails to teach or suggest all of the claim limitations as set forth in the present invention.

Group 1 is directed to a method for connecting a first user terminal of a first virtual private network to a second user terminal of a second virtual private network, whereas Group 2 is directed to an access network server, and Group 3 is directed to a subscriber data server, a user terminal and a software module for running on a processing system for inclusion in a subscriber data server, intended for use in a network having user terminals in different virtual private networks.

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
U.S. Appln. No.: 09/666,388

Attorney Docket No.: Q60803

Group 1: Independent claims 1 and dependent claims 2-5, 14 stand and fall together as they recite "upon an incoming request of communication from said first user terminal to said second user terminal, said subscriber data server locating said respective network access server connected to said second user terminal and notifying said second user-terminal based on said request of communication from said first user-terminal; and switching said second user terminal from said second virtual private network to said first virtual private network in response to said locating."

Group 2: Independent claims 6, 8 and dependent claims 7, 9 stand or fall together as they recite: "user terminal connect notification sending means, coupled with said switching means, for sending connection information to a subscriber data server, upon the connecting of one of said user terminals to said network access server and upon said switch-over of said connection of one of said user terminals from the one of the virtual private networks to the other."

Group 3: Independent claims 10-13 stand or fall together as they contain means or a sub-module for establishing a connection for a first user terminal of a first virtual private network with a second user terminal in a second virtual private network.

Accordingly, the claims in **Groups 1-3** are believed to be separately patentable because of the limitations therein, and therefore they do not stand and fall together.

Group 1

Appellant first turns to claim 1 as being the broadest of these claims, and as being representative. The method set forth in claim 1 recites: "upon an incoming request of communication from said first user terminal to said second user terminal, said subscriber data server locating said respective network access server connected to said second user terminal and notifying said second user-terminal based on said request of communication from said first user-terminal; and notifying said second user-terminal based on said request of communication from said first user terminal; and switching said second user terminal from said second virtual private network to said first virtual private network."

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
U.S. Appln. No.: 09/666,388

Attorney Docket No.: Q60803

Chuah does not meet the forgoing requirement. In fact, Chuah addresses a different problem, which is the opposite of the problem addressed in the present invention. Chuah tries to maintain a connection to the same VPN, whereas the subject matter of the representative claim 1 deals with switching between VPNs. Finally, Chuah teaches changing the tunnel of the originating mobile station and fails to teach or suggest switching the VPN of the receiving user terminal. These issues are addressed in greater detail below.

Chuah's Teachings

In general, Chuah teaches a method of switching a remote user to a different Internet Service Provider (ISP) without losing a previously established VPN connection (Fig. 1; col. 1, line 55 to col. 2, line 12). In particular, Chuah teaches a remote user initiating a point to point connection to the serving LAC (NAS) in ISP B. ISP B authenticates the user and accepts the connection (Fig. 2; col. 3, lines 50 to 65). Next, in order to establish the VPN, the serving LAC checks its VPN table, which has an association between users and anchor LACs (another NAS), and identifies the anchor LAC associated with this user. Once the anchor LAC is identified, a tunnel is established between the service LAC and the anchor LAC provided there are no existing tunnels between the two LACs (Fig. 2; col. 4, lines 12 to 60). Once the tunnel is established, the serving LAC forwards a VPN request along with user information to the anchor LAC. The anchor LAC identifies the associated LNS (a corporate network server that provides a VPN) and establishes a VPN session (Fig. 3; col. 4, line 65 to col. 5, line 62).

This multi-hopping technique is especially beneficial for establishing a VPN from a cellular phone (its location may change to a different geographical area; thereby, resulting in a VPN session being dropped). Specifically, the PCS wireless network detects the need for a hand-off and provides the new LAC with a notification of an impending hand-off. The new LAC identifies the anchor LAC, establishes the connection with the anchor LAC and sends a continued call request message to the anchor LAC. The anchor LAC recovers information about the terminal and its connection to the VPN network; thereby, allowing the transfer of the existing connection to the new LAC (Fig. 10; col. 9, line 33 to col. 10, line 48). To sum up, Chuah teaches having a serving LAC and an anchor LAC that stores information about the VPN

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
U.S. Appln. No.: 09/666,388

Attorney Docket No.: Q60803

sessions. If a switch of the serving LACs needs to be made, the new serving LAC identifies the anchor LAC to obtain information about the current session and establishes a link to the current session. As a result, this arrangement prevents the drop-off of the VPN connection (instead the connection is continued through a new serving LAC).

Chuah addresses a different problem - switching Internet service providers while maintaining the connection to the same virtual private network

Whether an invention is patentable may depend on the discovery of the problem. *In re Koslow*, 707 F.2d 1366, 1373; 217 U.S.P.Q. 1089, 1098 (Fed. Cir. 1983), quoting *In re Spinnoble*, 405 F.2d 578, 585; 160 USPQ 237, 243 (CCPA 1969) ("[A] patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is part of the 'subject matter as a whole' which should always be considered in determining the obviousness of an invention under 35 U.S.C. 103."). In the present case, Chuah does not identify the problem the present invention solves, and also does not render the subject matter of the appealed claims to be unpatentable within the meaning of 35 U.S.C. § 103.

Chuah is completely different from the present invention, as set forth in the representative claim 1. The present invention addresses the problem of not being able to establish a connection between user terminals of different VPNs, whereas Chuah addresses the problem of not being able to log onto the same VPN from the visiting ISPs. In particular, with the development of the wireless communication networks, accessing the VPN only from the home ISP becomes a very limiting approach. Chuah teaches how to maintain the VPN connection (preventing drop-offs), while switching ISPs. Chuah teaches a tunneling method to provide access to the same VPN via different ISPs (col. 1, line 49 to col. 2, line 12). In short, the purpose of Chuah is to maintain access to the same information (the same VPN network). Chuah fails to teach or suggest switching from one VPN to another. Such a switch results in a complete informational loss with respect to the old VPN. In other words, the information accessed, after the switch occurs, is completely different (a new VPN). Additionally, not only is the problem being addressed by Chuah different from that of the present invention, but also the solution taught in this prior art

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
U.S. Appln. No.: 09/666,388

Attorney Docket No.: Q60803

reference is different from that of the present invention, and does not at all solve the problem at hand, as explained in further detail below.

***Chuah's creation of a tunnel or switching the servicing LACs
does NOT render obvious switching from a first VPN to a second VPN***

The relied upon prior art reference fails to teach or suggest "upon an incoming request of communication from said first user terminal to said second user terminal, said subscriber data server locating said respective network access server connected to said second user terminal and notifying said second user-terminal based on said request of communication from said first user-terminal; and notifying said second user-terminal based on said request of communication from said first user terminal; and switching said second user terminal from said second virtual private network to said first virtual private network", as required in the representative claim 1.

Chuah only teaches an anchor LAC that stores information about the connection to the LNS (the network server of a virtual private network, e.g. a corporate network) and a number of serving LACs that store an association between the user identification and the anchor LAC. Hence, upon receiving a request for a VPN connection, the serving LAC establishes a tunnel to the anchor LAC. The tunnel, however, from the anchor LAC to the VPN is the same. In other words, Chuah simply teaches creating one additional connection (between the serving LAC and the anchor LAC) to provide the user with access to the VPN from a visiting LAC. The establishment of a new tunnel, however, does not teach or suggest switching from one VPN to another.

Moreover, the hand-off procedure of Chuah does not teach or even remotely suggest the switching between VPNs, as required in the representative claim 1. During a hand-off, the old serving LAC provides the new serving LAC with information about the anchor LAC, so that the new serving LAC can establish a connection with the VPN, thereby, disconnecting the old serving LAC. This technique of Chuah, however, does not ameliorate reachability problems of two terminals in different VPNs. Chuah's technique simply teaches moving from a network access server of the first network to a network access server of the second network. Connection information is simply passed from the old network access server to the new network access

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
U.S. Appln. No.: 09/666,388

Attorney Docket No.: Q60803

server. The hand-off procedure clearly does not suggest "switching said second user terminal from said second virtual private network to said first virtual private network." In Chuah, during the hand-off procedure the connection information is simply passed from an old serving LAC to a new serving LAC.

That is, the personal computer that established a connection to the corporate network is simply being serviced by a different LAC, whereas when a virtual private network of the user terminal changes, the user terminal accesses a completely different set of information and is recognized by a different set of user terminals. In short, in Chuah, even though after the hand-off a new serving LAC is servicing the PC, the PC is still connected to the same virtual private network. Therefore, switching the servicing LACs cannot be compared with "switching said second user terminal from said second virtual private network to said first virtual private network", as required in the representative claim 1.

In short, the functionality and the result of the switch from one ISP to another ISP is completely different from switching between VPNs. In Chuah, when switching between ISPs (because the geographical location has changed), the function is to maintain connection for that terminal. The purpose of Chuah's switch is to maintain the connection to the same VPN, to avoid the drop-off. In contrast, the function of switching VPNs is to change connections (log onto a new network), and the purpose is to provide the user with different information available on a different VPN. In other words, Chuah attempts to maintain access to the same information, and not switch (force a disconnect from the previous VPN) to a new VPN. As such, Chuah's teachings of switching between an ISP of one network to an ISP of another network fails to teach or suggest switching said second user terminal from said second virtual private network to said first virtual private network.

***Chuah's switching the servicing LACs does not teach or suggest
notifying said second user-terminal of a connection request and
then switching said second user terminal***

Claim 1 recites: "upon incoming request of communication from said first user terminal to said second user terminal....notifying said second user terminal ... and switching said second user terminal..." Chuah teaches maintaining a connection of a personal computer (PC) to a VPN

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
U.S. Appln. No.: 09/666,388

Attorney Docket No.: Q60803

(see e.g., Fig. 1). Chuah clearly fails to teach or suggest a second user terminal and switching a second user terminal in response to a connection request from a first user terminal. In short, Chuah only deals with one VPN and one PC.

Moreover, *assuming arguendo* that switching the servicing LACs is compared to the user terminals, than Chuah fails to teach or suggest network access servers. Moreover, the new servicing LAC requests a connection and receives the connection from the anchor LAC. The connection between the LNS of the corporate network and the anchor LAC remains unchanged. In short, Chuah teaches modifying the connection of the requestor and not the user terminal to be contacted.

As a result, Chuah fails to teach or suggest "upon an incoming request of communication from said first user terminal to said second user terminal, said subscriber data server locating said respective network access server connected to said second user terminal and notifying said second user-terminal based on said request of communication from said first user-terminal; and switching said second user terminal from said second virtual private network to said first virtual private network," as set forth in the representative claim 1. Appellant respectfully submits that claim 1 and its dependent claims 2-5 and 14 are not obvious in view of Chuah. The rejection is thus not supported by substantial evidence (or any credible evidence at all). The Examiner's rejection of these claims must be reversed.

Group 2

Appellant turns to claim 6 as being the broadest of these claims, and as being a representative claim. Claim 6 requires a network access server with a "user terminal connect notification sending means, coupled with said switching means, for sending connection information to a subscriber data server, upon the connecting of one of said user terminals to said network access server and upon said switch-over of said connection of one of said user terminals from the one of the virtual private networks to the other."

Chuah does not meet the forgoing requirement. In fact, Chuah addresses a different problem, which is the antithesis of the problem addressed in the present invention, (see argument submitted with respect to Group 1). Chuah also fails to teach or suggest switching virtual private

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
U.S. Appln. No.: 09/666,388

Attorney Docket No.: Q60803

networks, as explained above, (see argument submitted with respect to group 1). In addition, Chuah fails to teach or suggest the switch notification means of the network access server as required by the representative claim 6.

The Examiner alleges that an anchor LAC teaches the switch notification means, as set forth in claim 6 and that it would have been obvious to move the notification means to the central server as opposed to access servers (see page 7 of the Final Office Action, mail date December 8, 2003). Chuah, however, teaches that the anchor LAC performs the switch of tunnels based on a request from the servicing LAC, and that the anchor LAC updates the connection information and notifies the appropriate servicing LAC (Fig. 10). In other words, the servicing LACs of Chuah are not the ones with "the notification means for sending connection information to a subscriber data server, upon the connecting of one of said user terminals to said network access server and upon said switch-over of said connection of one of said user terminals from the one of the virtual private networks to the other", as set forth in the representative claim 6.

Similarly, Chuah's anchor LAC does not have the notification means, as set forth in claim 6. The anchor LAC updates the tables with the connection information stored in the anchor LAC. Chuah's anchor LAC controls and manages the connection information as such it does not need to notify the servicing LACs of the changes. Moreover, even *assuming arguendo*, the anchor LAC has the notification means, then Chuah fails to teach or suggest a subscriber server as required in the representative claim 6.

Therefore, a network access server with "user terminal connect notification sending means, coupled with said switching means, for sending connection information to a subscriber data server, upon the connecting of one of said user terminals to said network access server and upon said switch-over of said connection of one of said user terminals from the one of the virtual private networks to the other", as set forth in the representative claim 6 is not taught or suggested by Chuah. Appellant respectfully submits that claims 6, 8 and their dependent claims 7 and 9 are not obvious in view of Chuah. Since the evidence does not support the Examiner's position, Appellant respectfully requests the Board to reverse this rejection.

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
U.S. Appln. No.: 09/666,388

Attorney Docket No.: Q60803

Group 3

Group 3 has independent claims 10-13. All of these independent claims recite means or a sub-module for establishing a connection between a first user terminal in a first virtual private network and a second user terminal in a second virtual private network. For example, taking claim 10 as being representative, it requires: "connection establishment request reception means for receiving a connection request, from a first one of the user terminals a first one of the virtual private networks, to establish a connection with a second one of the user terminals in a second one of the virtual private networks." Chuah does not meet the forgoing requirement.

These three independent claims are somewhat broader than claim 1, as they do not require that the network terminal to be contacted is the one switched to a different virtual private network as opposed to the originating terminal. These claims, however, are still patentable over Chuah because Chuah addresses a different problem, (see the argument submitted with respect to Group 1) and because Chuah fails to teach or suggest switching virtual private networks of the terminal to establish the connection with another terminal in another virtual private network, as explained above, (see the argument submitted with respect to Group 1). In short, Chuah fails to teach or suggest establishing a connection between the user terminals of the different virtual private networks. Appellant, therefore, respectfully submits that claims 10-13 are clearly patentable over Chuah.

Conclusion

In the Advisory Action dated March 16, 2004, the Examiner acknowledges that Chuah fails to teach or suggest switching between the VPNs. The Examiner goes on to allege that "it would require ordinary skill in the art to modify the invention of Chuah, which switches a client terminal between physical networks, to have a client terminal switch between two emulated networks such as VPNs." It seems, however, the Examiner believes such a modification is obvious in view of Chuah teachings of the hand-off procedure (switching servicing ISPs), *see* Final Office Action, dated December 8, 2003. Appellant respectfully submits that the Examiner's assertions are mistaken, as a method for switching the Internet service providers

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
U.S. Appln. No.: 09/666,388

Attorney Docket No.: Q60803

(ISPs) does not and cannot render obvious a method for switching the virtual private networks (VPNs), as explained above.

Chuah's general teaching of one kind of switch cannot reasonably be said to render any and every other switch operation unpatentable, within the meaning of 35 U.S.C. § 103.

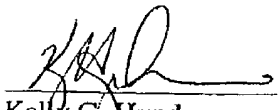
Appellant respectfully submits that claims 1-14 would not have been obvious in view of Chuah, and respectfully petitions the Board to reverse the § 103 rejection over Chuah.

IX. CONCLUSION

The present Brief on Appeal is being filed in triplicate. Unless a check is submitted herewith for the fee required under 37 C.F.R. §1.192(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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Date: June 7, 2004

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
Attorney Docket No.: Q60803
U.S. Application No.: 09/666,388

APPENDIX

CLAIMS 1-14 ON APPEAL:

1. A method for connecting a first user terminal of a first virtual private network to a second user terminal of a second virtual private network, over a network, said network having a plurality of user terminals and a plurality of network access servers, each of said plurality of user terminals being coupled to a respective network access server of said plurality of network access servers, comprising:
 - a. making a connection of said second user terminal to a first network access server, wherein said first network access server is said respective network access server of said second user terminal;
 - b. in response to said connection of said second user terminal, sending connection information from said first network access server to a subscriber data server included in said network and coupled to each of said plurality of network access servers;
 - c. updating a database of said subscriber data server based on said connection information;
 - d. upon an incoming request of communication from said first user terminal to said second user terminal, said subscriber data server locating said respective network access server connected to said second user terminal and notifying said second user-terminal based on said request of communication from said first user-terminal; and
 - e. switching said second user terminal from said second virtual private network to said first virtual private network in response to said locating.
2. The method according to claim 1, wherein:
said incoming request of communication is an incoming call request from said first user-terminal and is handled by said subscriber data server;

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
Attorney Docket No.: Q60803
U.S. Application No.: 09/666,388

said locating includes searching in said database of said subscriber data server for connection information of said second user-terminal;
said subscriber data server uses said connection information to determine said virtual private network and said respective network access server connected to said second user-terminal;
said subscriber data server indicates said incoming call request to said respective network access server connected to said second user-terminal; and
said respective network access server connected to said second user-terminal notifies said second user-terminal of said incoming call request.

3. The method according to claim 1, wherein said step of notifying said second user-terminal, based on said requesting of said communication from said first user-terminal, is performed over a transparent connection between said subscriber data server and said second user-terminal via said first network access server.
4. The method according to claim 1, further comprising, before said step d:
receiving said incoming call request of said first user-terminal at said respective network access server connected to said first user-terminal; and
said respective network access server connected to said first user-terminal sending said incoming call request of said first user-terminal to said subscriber data server.
5. The method according to claim 1, further comprising, before said step d, sending said incoming call request of said first user-terminal over a transparent connection between said first user-terminal and said subscriber data server via said network access server connected to said first user-terminal.

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
Attorney Docket No.: Q60803
U.S. Application No.: 09/666,388

6. A network access server for enabling a connection over a network between two user terminals of two different virtual private networks, wherein each of said user terminals is coupled to a respective network access server, the network access server comprising:
switch notification reception means for receiving a request, from one of said user terminals, to initiate a switch-over of a connection from one of said virtual private networks to the other;
switching means, coupled with said switch notification reception means, for performing said switch-over of said connection; and
user terminal connect notification sending means, coupled with said switching means, for sending connection information to a subscriber data server, upon the connecting of one of said user terminals to said network access server and upon said switch-over of said connection of one of said user terminals from the one of the virtual private networks to the other.
7. The network access server according to claim 6, further comprising:
connection establishment request reception means for receiving from said subscriber data server a connection request to establish said connection between said two user terminals;
and
connection establishment request sending means, coupled with said connection establishment requesting reception means, for notifying one of said user terminals about an incoming call from another of said user terminals.
8. A network access server, defined as a second network access server, intended for use in a network operating according to a method for connecting a first user terminal of a first virtual private network to a second user terminal of a second virtual private network, said network having a plurality of user terminals and a plurality of network access servers including said network access server, each of said plurality of user terminals being coupled to a respective

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
Attorney Docket No.: Q60803
U.S. Application No.: 09/666,388

network access server of said plurality of network access servers, the network operating method comprising:

- a. making a connection of said second user terminal to a first network access server, wherein said first network access server is said respective network access server of said second user terminal;
- b. in response to said connection of said second user terminal, sending connection information from said first network access server to a subscriber data server included in said network and coupled to each of said plurality of network access servers;
- c. updating a database of said subscriber data server based on said connection information;
- d. upon an incoming request of communication from said first user terminal to said second user terminal, said subscriber data server locating said respective network access server connected to said second user terminal and notifying said second user-terminal based on said request of communication from said first user-terminal; and
- e. switching said second user terminal from said second virtual private network to said first virtual private network in response to said locating.

wherein:

said incoming request of communication is an incoming call request from said first user-terminal and is handled by said subscriber data server;

said locating includes searching in said database of said subscriber data server for connection information of said second user-terminal;

said subscriber data server uses said connection information to determine said virtual private network and said network access server connected to said second user-terminal;

said subscriber data server indicates said incoming call request to said respective network access server connected to said second user-terminal;

said respective network access server connected to said second user-terminal notifies said second user-terminal of said incoming call request;

wherein said second network access server comprises:

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
Attorney Docket No.: Q60803
U.S. Application No.: 09/666,388

connection establishment request reception means, adapted to receive a connection request from said first user-terminal to establish said connection between said first user-terminal connected to said first virtual private network and said second user-terminal connected to said second virtual private network; and
connection establishment request sending means, coupled with an input to an output of said connection establishment requesting reception means and adapted to notify said subscriber data server about an incoming call from said first user-terminal.

9. A network access server according to claim 6, further comprising:
connection establishment request reception means for receiving from one of said user terminals a connection request to establish said connection between said two user terminals; and
connection establishment request sending means, coupled with said connection establishment requesting reception means, for notifying said subscriber data server about an incoming call from the one of said user terminals.
10. A subscriber data server, intended for use in a network having user terminals communicating with respective network access servers, wherein the network access servers communicate with the subscriber data server, and wherein some of the user terminals are in different virtual private networks, the subscriber data server comprising:
a connection information database;
user terminal connect notification reception means, adapted to receive connection information upon the connection of one of the user terminals to one of the network access servers;
user terminal connect notification updating means, coupled with the user terminal connect notification reception means, for updating the connection information database based on the connection information;
connection establishment request reception means for receiving a connection request, from a first one of the user terminals a first one of the virtual private networks, to establish a

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
Attorney Docket No.: Q60803
U.S. Application No.: 09/666,388

connection with a second one of the user terminals in a second one of the virtual private networks;

connection information searching means, coupled with the connection establishment request reception means, for searching in the connection information database for the connection information of the second user terminal; and

connection establishment request sending means, coupled with the connection information searching means, for notifying the second user terminal about an incoming call from said first user terminal, according to the connection information of the second user terminal.

11. A user terminal intended for use in a network having user terminals communicating with respective network access servers, wherein the network access servers communicate with a subscriber data server, and wherein some of the user terminals are in different virtual private networks, the user terminal comprising:

connection establishment request reception means for receiving, from the respective network access server of the user terminal, a connection request of a different user terminal from a different virtual private network to establish a connection to the user terminal;

incoming call handling means, coupled with the connection establishment request reception means, for handling the connection request from the different user terminal; and

switch requesting means, coupled with the incoming call handling means, for requesting the respective network access server to switch the connection of the user terminal from a current virtual private network to the different virtual private network of the different user terminal.

12. A software module for running on a processing system for inclusion in a subscriber data server, intended for use in a network having user terminals communicating with respective network access servers, wherein the network access servers communicate with the subscriber

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
Attorney Docket No.: Q60803
U.S. Application No.: 09/666,388

data server, and wherein some of the user terminals are in different virtual private networks, the software module comprising:

- a user terminal connect notification reception sub-module, adapted to receive connection information, upon connection of any of the user terminals to any one of the network access servers;
- a user terminal connect notification updating sub-module, cooperating with the user terminal connect notification reception sub-module, and adapted to update a connection information database based on the connection information;
- a connection establishment request reception sub-module, adapted to receive a connection request from a first one of the user terminals of one of the virtual private networks, to establish a connection with a second one of the user terminals of a different one of the virtual private networks;
- a connection information searching sub-module, cooperating with the connection establishment request reception sub-module, and adapted to search the connection information database for connection information of the second user terminal; and
- a connection establishment request sending sub-module, cooperating with the connection information searching sub-module, and adapted to notify the second user terminal about the incoming call from the first user terminal.

13. A software module intended for use in a given user terminal of a network having user terminals communicating with respective network access servers, wherein the network access servers communicate with a subscriber data server, and wherein some of the user terminals are in different virtual private networks, the software module comprising:

- a connection establishment request reception sub-module, adapted to receive from the respective network access server a connection request, of a different user terminal, to establish a connection to the given user terminal;
- an incoming call handling sub-module, cooperating with the connection establishment request reception sub-module, and adapted to handle the connection request; and

Appellants' Brief on Appeal Under 37 C.F.R. § 1.192
Attorney Docket No.: Q60803
U.S. Application No.: 09/666,388

a switch requesting sub-module, cooperating with the incoming call handling sub-module, and adapted to request the respective network access server of the given user terminal to switch the connection of the given user terminal from a current virtual private network to the different virtual private network of the different user terminal.

14. The method according to claim 1, wherein the step e further comprises:
- a. said second user terminal initiating and controlling a switch-over of said connection of said second user terminal from said second virtual private network to said first virtual private network;
 - b. said first network access server switching said connection of said second user terminal from said second virtual private network to said first virtual private network; and
 - c. upon switch-over of said connection of said second user terminal from said second virtual private network to said first virtual private network, sending connection information from said first network access server to said subscriber data server.